



Beyond the Choice

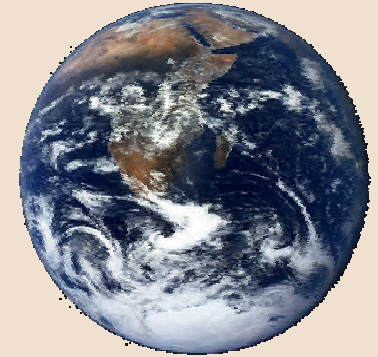
A Discussion of Overcoming the Financial and Legal Constraints of Renewable Energy Applications

**Methane Recovery from Hog Waste Integrated with Combined Heat & Power
Technologies: A Waste-to-Energy Workshop for Iowa's Swine Industry.
November 4-5, 2004**



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The Choice



- Anatomy of the Decision
 - What do you want to achieve?
 - Have you chosen the appropriate technology?
 - *Have you examined the Energy Efficiency implications of your project?*
 - **Will you be able to fund this project?**
 - **What are the legal hurdles you will need to overcome to pursue this project?**

What is the Goal?

- Energy Independence?
- Lower Energy Bills?
- Revenue Stream?

Your intended use of your renewable application will affect the type and size of your installation... and the potential funding and legal hurdles you may face.



Making the Choice

- How do you choose the appropriate technology?
 - Read!
 - Experts and consultants.
 - Trade shows.
- Do you know your options?



Making the Choice

- How do you choose the appropriate technology?
 - Read!
 - Experts and consultants.
 - Trade shows.
 - You are here!

- Diversification of technologies?



What about Energy Efficiency?

- Reduce consumption first!
- What resources are available?
 - Home store specialists.
 - Contact your utility.
 - Architects and engineering firms.
 - State Energy Office staff.
 - Home Energy calculator
www.homeenergysaver.lbl.gov
 - Look for the Energy Star label
www.energystar.gov



Beyond the Choice

- Funding
 - Grants/Rebates
 - Financing
 - Life cycle costs/ performance contracting/ power purchase agreements/ Tax incentives
- Legal hurdles
 - Interconnection and net metering
 - Zoning and land use issues



Grants

- Categories for direct assistance
 - Demonstration
 - Deployment
 - Research and Development
- Funding may also be available to your business – non-direct assistance
 - Small business grants
 - Faith-based initiative
 - Community Block grants



Grants - Sources

- Federal Government
 - Grants.gov
 - Farm Bill
 - Interested agencies (EPA, HUD)
- State Government and Affiliations
- Private Foundations
 - Energy Foundation, www.ef.org
 - Doris Duke Foundation
- Utilities and Businesses
 - Check your local area.



Grants – Approach you should take when putting them together

- Integrated ideas
- Cooperative
- Far reaching community benefits



Rebates

- Utilities are the most likely to provide.
- Will reduce the amount of up-front investment you will need to make in order to install.
- Often require you to use particular equipment or sign specific agreements.
- Austin Energy, a municipal utility company out of Texas, has arguably the most extensive rebate program in the country.



Financing

- Loan Programs
- Loan Guarantee Programs



Pay As You Power

- Life Cycle Cost Analysis
- Performance Contracting
- Tax Incentives
- Net Metering



Legal Issues

- Interconnection and power purchase agreements
- Zoning and land use issues
- Nuisance



Collaboration is the Key

- First step to any installation is to contact your utility.
 - Alliant Energy
 - MidAmerican Energy
 - Rural Electric Cooperative
 - Municipal Utility



The Road to Interconnection



- Connecting an energy producer to the electric grid is like building an on-ramp to the interstate highway
- Road systems are designed to allow vehicles to safely merge onto and travel the highway

The Road to Interconnection



- Interconnection is a way to merge electrons onto the electric distribution and transmission system
- Interconnection systems must also follow guidelines for safety and reliability

To Interconnect or Not

- Not all facilities need to interconnect

| No Interconnect | Interconnect |
|--|---|
| Islanded operation | Parallel operation |
| Closed or open transition | Power export |
| <i>Contact utility about safety procedures</i> | <i>Contact utility about interconnection and power purchase</i> |

Interconnection Vs. Purchase Agreements

- The process of interconnection is separate from net metering and purchase power agreements.
- Interconnection is the technical process of connecting a qualifying facility (QF) to the grid.
- Purchase power agreements are the financial documents outlining the sale of electricity.
- Sometimes they are negotiated together.

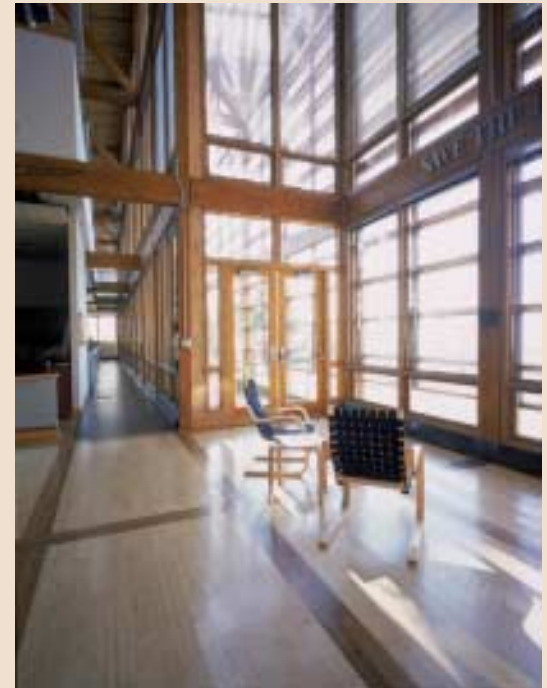
Application Process

- Power producer contacts utility
- Utility provides information about process and requirements
- Utility may provide interconnection application at this point



Costs of Interconnection

- Under federal and state law, utilities may require power producers to pay the costs of interconnection, including:
 - Fee for application
 - Engineering studies
 - Transmission studies
 - System upgrades



Conclusions

- Interconnection is not simple, but there is an effort to standardize the process
- Purpose of DNR handbook is to educate all parties
- Communication between utilities and producers is crucial from the beginning

Additional Resources

- Iowa DNR Energy Program
- Iowa Utilities Board
- Federal Energy Regulatory Commission
- Iowa Office of Consumer Advocate
- Alliant Energy
- MidAmerican Energy
- Iowa Association of Electric Cooperative
- Iowa Association of Municipal Utilities
- Renewable energy consultants and installers



Thank You!

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